MOSS-Instruction	Title: BOSS-SPACEX Launch Contingency HVAC Support			Number: MSO-I-0004	
Unit Issuing: Mission Support Office	Approved by: MOSS Manager	Initial Issue Date: 08/13/19	Page: 1 of 9	Revision: 1 Eff Date: 03/29/22	

PURPOSE

These instructions specify Base Operations Support Services (BOSS) planned facility configurations and facility Heating, Ventilation, and Air Conditioning (HVAC) safing plans in the event of a Falcon CRS launch abort at the Kennedy Space Center.

SCOPE AND APPLICABILITY

Areas include FSEU, Moss Branch, Utility Branch, PPS Branch, BOSS Engineering, and BOSS Safety.

PROCESS

This instruction addresses planned responses by BOSS regarding HVAC securing in the event of a launch abort when a Falcon CRS is launched from Pad A at Kennedy Space Center (KSC). All actions for this effort shall be directed by the Emergency Operations Center (EOC). Starting at 72-hours prior to launch, the EOC will define the impact zone and affected down-wind facilities. At 24-hours prior to launch, the EOC will update maps per the latest weather forecast allowing BOSS personnel to configure doors and KCCS Screens for launch day operations. In the case of an emergency all direction will come from the EOC through the JSTC to the Complex Control Center (CCC) for coordination with BOSS personnel in the field.

Facilities affected by this instruction are located in the LC39 area only, between Schwartz Road and Astronaut Road and east of Kennedy Parkway and including the C5 area. (Nothing east of the AB-11 roadblock). Per CCAFS 45th Space Wing Document 45SWI 91-203 “Launch Shelter Certification Process”, any facility that has an outside air exchange rate per hour of 0.5 or less meets the criteria to be classified as a launch shelter from possible exposure to launch related substances. NASA has also “adopted” this for classifying facilities KSC as launch shelters. Facilities that have been identified as having 0.5 outside air exchanges/hour or less, and that implement specifically identified physical mitigation controls, are exempt from any requirements to be secured via this instruction. Any facility in the LC39 area with greater than 0.5 outside air exchanges per hour has been evaluated for remote or local HVAC securing requirements or has been designated as a facility that must be evacuated. A summary of these facilities and the required response is shown in the Appendix table.

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Pre–identified facility managers shall ensure the facilities listed as having to have doors closed to meet the less than 0.5 air exchanges/hour requirements, are in the proper configuration prior to a Falcon CRS launch and will report readiness, 1-hour prior to launch, back to the HVAC Console in the CCC Via Phone at 867-2723 or Radio Net 104. HVAC console will then notify JSTC and JSTC will then notify CTC that the applicable facility doors are properly configured for a Falcon CRS launch.

HVAC shop supervision will ensure that a person, trained in how to locally secure facility HVAC systems in the event of a Falcon CRS launch anomaly, is located onsite in the Multi-Function Facility (K6-1145), Logistics Building (K6-1547), NASA Press Site (K7-1205F) and in the Utility Shop (K6-1246), prior to a Falcon CRS launch. The names of these people, along with their contact information, are to be provided to the HVAC console prior to a Falcon CRS Launch.

HVAC engineering and shop shall verify, prior to a Falcon CRS launch, that the following Air Handlers are in “Auto” mode, so that remote commands from the HVAC console will secure the equipment, in the event of a launch anomaly:

- K6-0794, TPSF Building; AHU-1, AHU-2, AHU-3, AHU-4, AHU-5 and AHU-8
- K6-0848 VAB Low Bay East and Low Bay West: AHU-100, AHU-101, AHU-102, AHU-103, AHU-121, AHU-122, and AHU-124.
- K6-1249, OSB2: AHU-1, AHU-2, AHU-3, AHU-4, AHU-5, AHU-6, AHU-7, AHU-8, AHU-9, AHU-10 and AHU-11
- K6-0900, LCC: AHU-200, AHU-201, AHU-202, AHU-203, AHU-204, AHU-205, AHU-209, AHU-236, AHU-310, and AHU-319.

HVAC Console operations personnel shall, prior to a Falcon CRS launch, configure all facility equipment per buttons on KCCS Screen UAA to select all Air Handlers and de-select all chilled water pumps for K6-0900 (Launch Control Center), K6-0848 (VAB Low Bay East/West) and K6-0794 (TPSF). HVAC console operations personnel shall also de-select all equipment for all other areas of the VAB, OPF, Logistics, C3PF, UTIL, LES, PCC and VABR through the buttons on Screen UAA. Console operations personnel shall perform these tasks using Checklist CCC-F-0001, the “HVAC Console Falcon CRS Launch Support Checklist.”

In the event of a Falcon CRS launch anomaly, and upon direction from the Emergency Operations Center (EOC), HVAC console operations personnel will (1) Use KCCS Screen UAA and activate the “LOADSHED EQUIPMENT”; (2) Use KCCS Screen ESD and activate the “OSB 2 SHUTDOWN” Button and (3) Use KCCS Screen “VBB” to Shut Down VAB AHU-138. Air handlers in the following buildings will be secured remotely as directed by EOC: HVAC console will also immediately notify the Points of Contact identified for the Multi-Function Facility (K6-1145), Logistics Building (K6-1547), NASA Press Site (K7-1205F) and the Utility Shop (K6-1246) to let them know the EOC has directed emergency HVAC securing due to a launch anomaly.

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- K7-0418 Propellants North Admin: AHU-1 [Screen PROP]
- K7-0559 Ordnance Operations Facility: AHU-1 [Screen OOF

This instruction also addresses planned responses by BOSS regarding HVAC securing in the event of a launch vehicle anomaly during a planned static fire from LC39A with personnel located at LC39B. All actions for this effort shall be directed by the Emergency Operations Center (EOC). Air handlers in the following buildings will be secured remotely as directed by EOC:

- J7-0689 Pad B Operations Support Building: AHU 1 [Screen OSBB]
- J7-0337 Pad B PTCR: AHU 1, AHU 2, AHU 3 [Screen PBC]
- J7-0337 Pad B ECS Room: AHU-5 and AHU-6 [Screen PBB]
- J7-0286 Environ Control and Life Support: FCU-1 and FCU-2 [Screen PBB]

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APPENDIX A: HVAC FACLITY SUMMARY

Building	Facility Name	Air Exchange <.5 Per Hour Secure AHU if N	Remote KCCS Safing Available	Energy Conser. Plan	Local Safing Required	Notes
K6-1096	OSB-1	Y 0.23	N/A	Y	N/A	Start air handlers remotely for off shift and weekend
K6-0848	Transfer Aisle	Y (with doors closed)	N/A	N	N/A	Doors must be closed
K6-0947	VAB Utility Annex	Y (with doors closed)	N/A	N	N/A	Doors must be closed. Personnel must remain in Control Room until all Clear.
K7-1207	NASA News Center	Y 0.44	N/A	N	N/A	N/A
K6-1446K	EMF	Y 0.40	N/A	Y	N/A	Start air handlers remotely for off-shift & weekend
K7-0468	CCF (Admin Space)	Y	N/A	N	N/A	N/A
K6-0794	TPSF	N	Y	Y	N/A	N/A
K6-0848	VAB Low Bay East	N	Y	Y	N/A	N/A
K6-0848	VAB Low Bay West	N	Y	Y	N/A	N/A
K6-0900	LCC	N	Y	Y	N/A	N/A
K6-1249	OSB-2	N	Y	Y	N/A	N/A
J7-0337	Pad B	N	Y*	N	N/A	*Evacuate Facility Prior to Launch.
K6-1696	CRCA	N	Y*	N	N/A	*Evacuate Facility - If Required.
K6-1547	Logistics	N	N	Y	Y	Local Control
K6-1246	Utility Shop	N	N	N	Y	Local Control
K7-1205F	NASA Press Site	N	N	N	Y	Local Control
K6-1145	MFF	N	N	Y	Y	Operational Impact if Secured.

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Building	Facility Name	Air Exchange <.5 Per Hour Secure AHU if N	Remote KCCS Safing Available	Energy Conser. Plan	Local Safing Required	Notes
J7-0337	Pad B PTCR	N	Y	N	N/A	Only required if LC39B manned for Falcon Launch Activities from LC39A
J7-0689	Pad B OPS Building	N	N*	N	N/A	Only required if LC39B manned for Falcon Launch Activities from LC39A
J7-0337	Pad B ECS Room	N	Y	N	N/A	Only required if LC39B manned for Falcon Launch Activities from LC39A
J7-0286	Environmental Control and Life Support Systems	N	N*	N	N/A	Only required if LC39B manned for Falcon Launch Activities from LC39A
K7-0418	Propellants North Admin	Y 0.45	N*	N	N	
K7-0559	Ordnance Operations Facility	N/A	N*	N	N	Due to the fact that this facility has Remote HVAC Safing Means - BOSS has not performed Air Exchange Rate Calculations.
L6-0146	BFF Engineering and Administration Building	N/A	N	N	Y	This Facility at the BFF complex is controlled by a Pull Station / BAS Toxic Cloud Shutdown. Therefore, BOSS did not perform air exchange rate calculations.
L6-0147	BFF Chiller Building	N/A	N	N	Y	This Facility at the BFF complex is controlled by a Pull Station / BAS Toxic Cloud Shutdown. Therefore, BOSS did

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						not perform air exchange rate calculations.
L6-0247	BFF Manufacturing Building	N/A	N	N	Y	This Facility at the BFF complex is controlled by a Pull Station / BAS Toxic Cloud Shutdown. Therefore, BOSS did not perform air exchange rate calculations.
L6-0248	BFF Service Building	N/A	N	N	Y	This Facility at the BFF complex is controlled by a Pull Station / BAS Toxic Cloud Shutdown. Therefore, BOSS did not perform air exchange rate calculations.
L6-0297	BFF MPSF Storage Building	N/A	N	N	Y	This Facility at the BFF complex is controlled by a Pull Station / BAS Toxic Cloud Shutdown. Therefore, BOSS did not perform air exchange rate calculations.
L7-0251	BFF AFT Skirt Test Building	N/A	N	N	Y	This Facility at the BFF complex is controlled by a Pull Station / BAS Toxic Cloud Shutdown. Therefore, BOSS did not perform air exchange rate calculations.
K6-0696	Commercial Crew and Cargo Processing Facility (C3PF)	N/A	N	N	Y	Per NASA, the C3PF was just over the required 0.5 air exchange per hour - and the Boeing Facility Team will be standing by should there be an issue to autonomously modify the air intake from their air handlers and

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						HVAC System in the case of emergency. This facility becomes acceptable, with Boeing action, should it be necessary.
K6-0894	OPF Annex	N/A	N	N	N	Per NASA, the OPF Annex is an acceptable Shelter.
J8-2007	Falcon Heavy Hangar	N/A	N	N	N	Per NASA, SpaceX provided feedback suggesting the Falcon Heavy Hangar has an acceptable air exchange rate of less than 0.5/hour and may be used as a shelter as necessary.
J8-2109	Falcon Support Bldg	N/A	N	N	N	Per NASA, SpaceX provided feedback suggesting the Falcon Support Bldg has an acceptable air exchange rate of less than 0.5/hour and may be used as a shelter as necessary
H5-1434	Maintenance Bldg	0.12	N	N	N	
K6-2496	Security Patrol Headquarters	0.44	N	N	N	
K7-0569	Converter Compressor Operations Building	Y 0.40	N	N	N	
K7-0617	NDE Office Building	Y	N	N	N	

*These facilities with remote securing capable AHUs have not been tested.

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RECORDS

The following records are retained by the organizations listed below:

Record	Responsible Organization
CCC-F-0001 HVAC CONSOLE FALCON CRS LAUNCH SUPPORT CHECKLIST	MOSS

ROLES AND RESPONSIBILITIES

Affected Personnel: Ensure knowledge of this process and the training to implement as directed.

ACRONYMS

AHU	Air Handler Unit
BOSS	Base Operations Support Services
CCAFS	Cape Canaveral Air Force Station
CCC	Complex Control Center
CCF	Compressor Converter Facility
CRS	Commercial Resupply Service
CTC	Contractor Test Conductor
EOC	Emergency Operations Center
ESD	Exploration Systems Development
FSEU	Facilities, Systems, Equipment, and Utilities
HVAC	Heating, Ventilation, and Air Conditioning
JSTC	Joint Support Test Conductor
KCCS	Kennedy Complex Control System
LC	Launch Complex
LCC	Launch Control Center
LES	Launch Equipment Shop
MFF	Multi-Function Facility
OSB	Operational Support Building
OPF	Orbiter Processing Facility
PCC	Processing Control Center
PTCR	Pad Terminal Connection Room
SWI	Space Wing Instructions
TPSF	Thermal Protection System Facility
VAB	Vehicle Assembly Building
VABR	Vehicle Assembly Building Repeater

REVISION RECORD

The following revisions have been applied to this document:

Revision Number	Change Description	Date
0	Initial release	08/13/19
1	Added facilities with an air exchange rate LT .5	03/29/22

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DOCUMENT APPROVALS

4/15/2022

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4/7/2022

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